DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-7, 9-14, 29-33, 35-40, 45-48 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659).

With respect to claim 56, Averill et al. teaches in Fig. 1 a printing device the printing device comprising: printing units ((28, 30, 32, 34, 36, and 38); a transport system (10) for the said substrate (130) having a receiving device (128), which is heated (using ovens 40, 42, and 44), to which one or more heating elements (i.e. ovens 40, 42, and 44 are used) for introducing heat energy into the substrate are assigned, wherein upstream of the first printing unit (28) of (the group of) printing units (28, 30, 32, 34, 36, and 38), arranged one behind the other in a transport direction of the receiving device (128), the substrate (130), is received in a separate receiving device (128) for each substrate (130) and is sequentially conducted to the printing units (28, 30, 32, 34, 36, and 38).

However, Averill et al. remains silent regarding a cooling device is assigned to the transfer medium of said printing unit, which is capable of removing heat energy from

the transfer medium, while fails to teach the printing units to be electro-photographic printing units, to which a transfer medium for transferring a toner powder to respectively one substrate in a transfer zone is assigned, wherein one or more substrates is conducted through the transfer zone by a transport system.

Thompson et al. teaches in fig. 1 a printing unit being a electro-photographic printing unit, to which a transfer medium (drum 24) for transferring a toner powder (from drums 22) to respectively one substrate in a transfer zone (located at roller 32) is assigned and a cooling device (36), assigned to the transfer medium (drum 24) of said printing unit, which is capable of removing heat energy from the transfer medium (drum 24, Col. 4 lines 5-11).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Averill et al. by replacing each of the printing units (28, 30, 32, 34, 36, and 38) of Averill et al. with a printing unit of Thompson et al. so as to include the cooling device taught by Thompson et al. because the printing device of Thompson et al. is well known in the art for printing onto substrates as well as teaching in Col. 4 lines 1-11 where the cooling means prevents overheating of the photoconductor 20, reducing damage from occurring to the printing device itself.

With respect to claim 2, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein each said heating element, 40, 42, and 44 are arranged on a side of the substrate facing away, i.e. above the receiving device, 128, of the transport system.

With respect to claims 3 and 29, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein the substrate is fixed in place supported at least partially on the receiving device, 128, as seen in Fig. 4.

With respect to claims 4 and 30, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein receiving device, 128, has an approximately frame-shaped receiving structure, 122, Fig. 4 for supporting the respective substrate, 130. Insofar as how the term "frame" is structurally defined in the claim, the examiner has interpreted the word according to the Webster dictionary definition of: *something composed of parts fitted together and united.*

With respect to claims 5 and 31, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein a plurality of printing units are arranged one behind the other for imprinting each said substrate, 130, in a different color, Col. 13 lines 26-43.

With respect to claims 6, 7, 32 and 33, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein the transport system, 10, conducts a plurality of the substrates, i.e. CDs, arranged one behind the other, as seen in Fig.1, through the transfer zones of each of the printing units, 28, 30, 32, 34, 36 and 38, where in the transport system, 10, moves the substrate, 130, continuously.

With respect to claims 9 and 35, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein downstream of the last printing unit, 38, of the printing units arranged one behind the other in the transport direction of the receiving device, 128, the substrate can be removed from the respective receiving device, 128.

With respect to claims 10 and 36, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein following removal from the receiving device the substrate can be transferred to a sorting unit, 14.

With respect to claims 11, 12, 37 and 38, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein the transport system, 10, has a conveying device, i.e. conveying element, 16, which transports the receiving device, 128, along a guidance arrangement, 49.

With respect to claims 13 and 39, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein the guidance arrangement, 49, can be an arrangement of a guide rails.

With respect to claims 14 and 40, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. a printing device wherein the guidance arrangement

forms one of a closed track, and a conveying circuit for conveying the receiving device as seen in Fig. 1.

With respect to claims 47 and 48, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. all that is claimed in above rejection of claim 56 including wherein the substrate, 130, is moved by the transport system, 10, beyond the transfer medium synchronously with a circumferential speed of the transfer medium, insofar as recited structure, except remains silent regard a printing device wherein the substrate rests on a conductive support of the receiving device and the support is charged with a reversed polarity sign, i.e. opposite, compared with the charge of the toner.

Thompson et al. further teaches in Fig.1 of Thompson et al. a printing device wherein the substrate, i.e. sheets, rests on a conductive support of the receiving device, 32, and the support is charged with a reversed polarity sign compared with the charge of the toner.

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the receiving device of Averill et al. to contain the conductive surface and reversed polarity of the toner as taught in Thompson et al. because as taught in the abstract of Thompson et al. the opposite polarity prevents premature transfer of the image on the transfer roller.

With respect to claim 45, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Thompson et al. a printing device wherein the transfer medium is a transfer roller, drum 24.

With respect to claims 46, Averill et al. as modified by Thompson teaches in Fig. 1 of Thompson et al. a printing device wherein the transfer medium (drum 24) of the printing unit has a lower temperature in the transfer zone formed with the substrate at least in an area of the contact surface, than a surface of the substrate, insofar as recited structure is concerned which enables the substrate having a higher temperature than the transfer medium (24).

Claims 15-22, and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659), as applied to claims 56, 14, and 40 above, and further in view of Yawata et al. (5,197,384).

With respect to claim 15-18, and 41-43, Averill et al. as modified by Thompson et al. teaches all that is claimed in the above rejection of claims 56, 14 and 40, but fail to teach a cleaning device for the receiving device arranged at the conveying circuit, wherein the cleaning device is arranged following the last printing unit of the printing units arranged one behind the other in the conveying direction of the receiving device in a closed track, and the receiving device can be introduced into the cleaning device

following the removal of the substrate and upstream the first printing unit, where the substrate is received downstream the cleaning unit and upstream the first printing unit.

Yawata et al. teaches in Fig. 1 a cleaning device, 60, used for removing excess ink.

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Averill et al. as modified by Thompson et al. to include the cleaning device of Yawata et al. to the printing units as modified by Thompson et al. downstream the last printing unit and upstream the first because the cleaning device will remove any excess toner thereby reducing the possibility of smudges from occurring on future received substrates.

With respect to claim 19, Averill et al. as modified by Thompson et al. further modified by Yawata et al. teaches in Fig. 1 of Thompson et al. a printing device wherein the transfer medium is a transfer roller, drum 24.

With respect to claim 20, Averill et al. as modified by Thompson et al further modified by Yawata et al. teaches in Fig. 1 of Thompson et al. a printing device wherein the transfer medium (drum 24) of the printing unit has a lower temperature in the transfer zone formed with the substrate at least in an area of the contact surface, than a surface of the substrate, insofar as recited structure is concerned which enables the substrate having a higher temperature than the transfer medium (24).

With respect to claims 21 and 22, Averill et al. as modified by Thompson et al. teaches in Fig. 1 of Averill et al. the substrate (130) is moved by the transport system (10) beyond the transfer medium synchronously with a circumferential speed of the transfer medium, insofar as recited structure, except, Averill et al. remains silent regarding a printing device wherein the substrate rests on a conductive support of the receiving device and the support is charged with a reversed polarity sign, i.e. opposite, compared with the charge of the toner.

Thompson et al. further teaches in Fig.1 a printing device wherein the substrate, i.e. sheets, rests on a conductive support of the receiving device, 32, and the support is charged with a reversed polarity sign compared with the charge of the toner.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the receiving device of Averill et al. to contain the conductive surface and reversed polarity of the toner as taught in Thompson et al. because as taught in the abstract of Thompson et al. the opposite polarity prevents premature transfer of the image on the transfer roller.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659) and Yawata et al. (5,197,384), as applied to claim 22 above, and further in view of Eisler (2,971,073).

With respect to claim 24, Averill et al., Thompson et al. as modified by Yawata et al. teach all that is claimed including a UV heating element (40, 42, and 44) capable of

having a wavelength of heat radiation matched exactly to an absorption maximum of at least one of the substrate (i.e. CD), and a plastic matrix of the toner (Col. 5 lines 20-32 of Thompson et al., insofar as recited structure) but fails to teach said substrate being charged with heat energy by a metal foil heating device.

Eisler teaches in Fig. 1 a metal foil heating device. Because both Averill et al. and Eisler teach devices for heating a substrate, substituting one heating device for the other would be obvious to one of ordinary skill in the art at the time of invention because it would achieve the predictable result of heating a substrate to a desired temperature.

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114), Thompson et al. (5,640,659), Yawata et al. (5,197,384), and Eisler (2,971,073), as applied to claim 24 above, and further in view of Schulthels et al. (2007/0172268).

With respect to claims 25 and 26, Averill et al. as modified by Thompson et al. and Yawata et al. teach all that is claimed in the above rejection of claim 24, except wherein a temperature sensor, i.e. pyrometer, is assigned to the substrate, at least one of the heating element and the transport system can be controlled by a control device as a function of a signal emitted by the temperature sensor.

Schulthels et al. teaches in paragraph 39 a temperature sensor, i.e. pyrometer, 21, is assigned to the substrate, at least one of the heating element and the transport system *can be* controlled by a control device as a function of a signal emitted by the

temperature sensor, paragraph 34, insofar as what is recited that "can" perform the recited function.

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Averill et al. to include the temperature sensor of Schulthels et al. to the printer of Averill et al. because Schulthels et al. teaches in paragraph 39 such temperature sensors aid in the regulation of heat output and therefore enhancing the print quality of the device.

Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114), Thompson et al. (5,640,659), Yawata et al. (5,197,384), and Eisler (2,971,073) and Schulthels et al. (2007/0172268), as applied to claim 26 above, and further in view of Waterschoot (6,539,197).

With respect to claims 27 and 28, Averill et al., Thompson et al. as modified by ,Yawata et al., Eisler, and Schulthels teach all that is claimed in the above rejection of claim 26, including a conditioned air flow via element (36 as taught in Thompson et al.), is directed onto a surface of at least one of the transfer medium (drum 24), however Averill et al., as modified byThompson et al.,Yawata et al., Eisler, and Schulthels fail to teach at least one liquid-cooled contact roller of the cooling device (28) roll off on the transfer medium.

Waterschoot teaches in Fig. 6 a roller (215) that contains a cooling liquid such as water directed through the roller, Col. 9 lines 17-30.

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Averill et al. to include the water cooled roller (215) of Waterschoot because in Col. 9 lines 17-30 of Waterschoot the cooling effect assists in establishing the required temperature gradient at a transfer point, ensuring proper image transfer.

Claims 8, 55, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659) as applied to claim 56 above, and further in view of further in view of Yawata et al. (5,197,384).

With respect to claim 57, Averill et al. teaches in Fig. 1, a printing device comprising: printing units ((28, 30, 32, 34, 36, and 38); a transport system (10) for the said substrate (130) having a receiving device (128), which is heated (using ovens 40, 42, and 44), to which one or more heating elements (i.e. ovens 40, 42, and 44 are used) for introducing heat energy into the substrate are assigned, wherein the substrate (130), is received in a separate receiving device (128) for each substrate (130) and is sequentially conducted to the printing units (28, 30, 32, 34, 36, and 38).

However, Averill et al. remains silent regarding a cooling device is assigned to the transfer medium of said printing unit, which is capable of removing heat energy from the transfer medium, while failing to teach the printing units to be electro-photographic printing units, to which a transfer medium for transferring a toner powder to respectively one substrate in a transfer zone is assigned, wherein one or more substrates is conducted through the transfer zone by a transport system and a cleaning device for the

receiving device arranged at the conveying circuit, wherein the cleaning device is arranged following the last printing unit of the printing units arranged one behind the other in the conveying direction of the receiving device, and the receiving device can be introduced into the cleaning device following the removal of the substrate and upstream the first printing unit, where the substrate is received downstream the cleaning unit and upstream the first printing unit..

Thompson et al. teaches in fig. 1 a printing unit being a electro-photographic printing unit, to which a transfer medium (drum 24) for transferring a toner powder (from drums 22) to respectively one substrate in a transfer zone (located at roller 32) is assigned and a cooling device (36), assigned to the transfer medium (drum 24) of said printing unit, which is capable of removing heat energy from the transfer medium (drum 24, Col. 4 lines 5-11).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Averill et al. by replacing each of the printing units (28, 30, 32, 34, 36, and 38) of Averill et al. with a printing unit of Thompson et al. so as to include the cooling device taught by Thompson et al. because the printing device of Thompson et al. is well known in the art for printing onto substrates as well as teaching in Col. 4 lines 1-11 where the cooling means prevents overheating of the photoconductor 20, reducing damage from occurring to the printing device itself.

Both Averill et al. and Thompson et al. fail to teach a cleaning device for the receiving device arranged at the conveying circuit, wherein the cleaning device is arranged following the last printing unit of the printing units arranged one behind the

other in the conveying direction of the receiving device, and the receiving device can be introduced into the cleaning device following the removal of the substrate and upstream the first printing unit, where the substrate is received downstream the cleaning unit and upstream the first printing unit..

Yawata et al. teaches in Fig. 1 a cleaning device used for removing excess ink. It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Averill et al. and Thompson et al. to include the cleaning deceive of Yawata et al. to the printing unit downstream the last printing unit and upstream the first because the cleaning device will remove any excess toner thereby reducing the possibility of smudges from occurring on future received substrates.

With respect to claim 8, Averill et al. as modified by Thompsone et al. and Yawata et al. teaches in Fig. 1 of Averill et al. the printing device wherein upstream of the first printing unit (28) of the printing units arranged one behind the other in the transport direction of the receiving device (128), the substrate (130) can be received in a separate receiving device, as seen in fig. 1, and can be sequentially conducted to the printing units.

With respect to claim 55, Averill et al. as modified by Thompson et al. and Yawata et al. teaches in Fig. 1 of Averill et al. a printing device wherein each said heating elements, i.e. ovens 40, 42, and 44 are arranged on a side of the substrate facing away, i.e. above the receiving device, 128, of the transport system.

Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659), as applied to claim 56, further in view of Eisler (2,971,073).

With respect to claim 50, Averill et al., as modified by Thompson et al. teach all that is claimed including a UV heating element capable of having a wavelength of heat radiation matched exactly to an absorption maximum of at least one of the substrate, i.e. CD, and a plastic matrix of the toner (of Thomspon et al.) insofar as recited structure but fails to teach said substrate being charged with heat energy by a metal foil heating device.

Eisler teaches in Fig. 1 a metal foil heating device. Because both Averill et al. and Eisler teach heating devices for heating a substrate, substituting one for the other would be obvious to one of ordinary skill in the art at the time of invention because it would achieve the predictable result of heating a substrate to a desired temperature.

Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659), as applied to claim 56, further in view of Schulthels et al. (2007/0172268).

With respect to claims 51 and 52, Averill et al., as modified by Thompson et al. teach all that is claimed in the above rejection of claim 56, except wherein a temperature sensor, i.e. pyrometer, is assigned to the substrate at least one of the

heating element and the transport system can be controlled by a control device as a function of a signal emitted by the temperature sensor.

Schulthels et al. teaches in paragraph 39 a temperature sensor, i.e. pyrometer, 21, is assigned to the substrate, at least one of the heating element and the transport system *can be* controlled by a control device as a function of a signal emitted by the temperature sensor, paragraph 34, insofar as what is recited that can perform the recited function.

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Averill et al. to include the temperature sensor of Schulthels et al. to the printer of Averill et al. because Schulthels et al. teaches in paragraph 39 such temperature sensors aid in the regulation of heat output and therefore enhancing the print quality of the device.

Claims 53 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Averill et al. (5,865,114) in view of Thompson et al. (5,640,659), as applied to claim 56, further in view of Waterschoot (6,539,197).

With respect to claims 53 and 54, Averill et al., as modified by Thompson et al. teach all that is claimed in the above rejection of claim 56, including a conditioned air flow via element, (36 as taught in Thompson et al.), is directed onto a surface of at least one of the transfer medium (drum 24), however Averill et al., Thompson et al., fail to

teach at least one liquid-cooled contact roller of the cooling device (28) roll off on the transfer medium.

Waterschoot teaches in Fig. 6 a roller, 215, that can a cooling liquid such as water directed through the roller, Col. 9 lines 17-30. It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Averill et al. to include the water cooled roller, 215, of Waterschoot because in Col. 9 lines 17-30 the cooling effect assists in establishing the required temperature gradient at a transfer point, ensuring proper image transfer.

Response to Arguments

Applicant's arguments filed 2/22/10 have been fully considered but they are not persuasive. Regarding applicant's arguments, specifically how Averill et al. does not teach heating elements for introducing heat energy, the examiner respectfully disagrees. The ovens disclosed in Averill et al. (40, 42, and 44) provided (i.e. introduce) ultraviolet heat energy to the substrate as the substrate is feed along the track by the receiving device. As for what is structurally recited, the claim language does not further distinguish the receiving device and the heating elements and their relationship over the taught structure of Averill et al. Therefore ovens 40, 42 and 44 read on the recited claim language of "heating elements for introducing heat energy".

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW G. MARINI whose telephone number is (571)272-2676. The examiner can normally be reached on Monday-Friday 8:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew Marini

/Judy Nguyen/
Supervisory Patent Examiner, Art Unit 2854